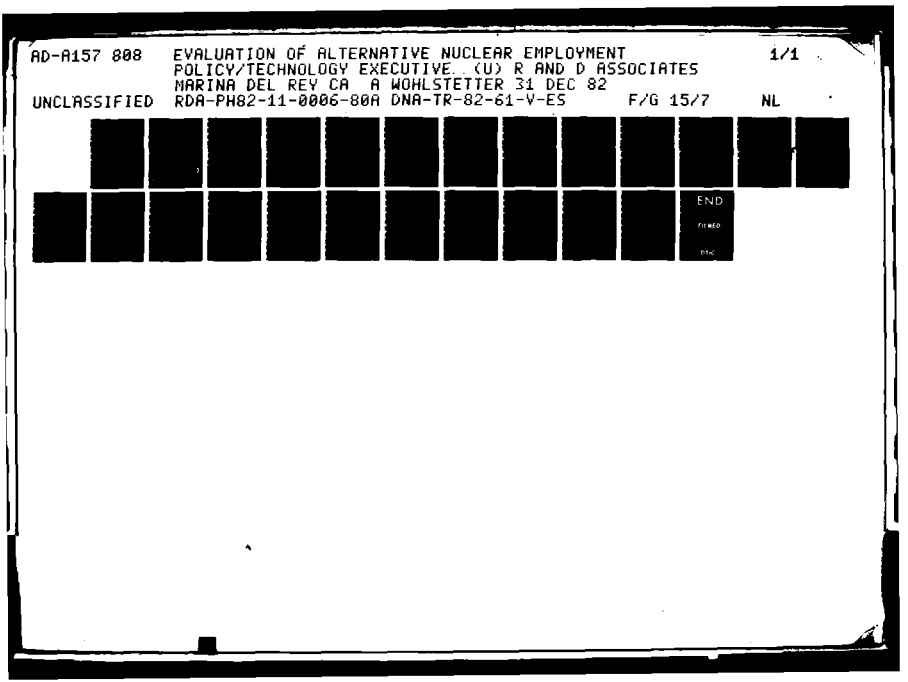
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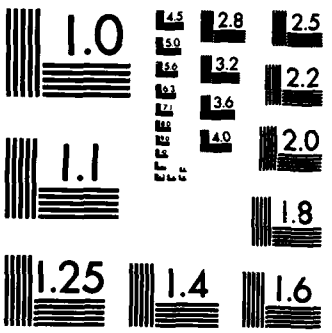

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EVALUATION OF ALTERNATIVE NUCLEAR EMPLOYMENT POLICY/TECHNOLOGY

Executive Summary—Strategy, Technology, and the Threat

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31 December 1982

Technical Report

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This paper examines needed adaptations of our nuclear and nonnuclear strategy. In particular, it considers the impact of changes in the threat and changes in technology. Emphasis is placed on the increasing need for improved conventional capability.

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STRATEGY, TECHNOLOGY AND THE THREAT*

A. The Nuclear Threat and its Interaction With The Conventional Threat

Soviet nuclear capability has grown relative to our own and eroded the persuasiveness of NATO's early use of nuclear weapons as a substitute for conventional strength. We want the potential use of the West's nuclear force to deter the Soviets from starting a nuclear war; and also to cast a shadow over their use of conventional force and so complicate the way they need to deploy it to avoid nuclear destruction; and therefore, to help deter or fight a conventional invasion as well. However, this calls for large improvements in the West's ability to make precise and effective use of non-nuclear as well as nuclear force. In both cases, precision means not only improved effectiveness in destroying military targets but greatly improved discriminateness and control in the damage done. Discrimination and control are essential if we are to give allies a reason to believe that victory need not be Pyrrhic and to give adversaries a continuing stake in prudence.

B. The Growing and Spreading Nonnuclear Threat

The Soviet nonnuclear forces have grown in size, readiness, and technical performance. They can now endanger many critical areas near the Soviet periphery at nearly the same time. They could use high performance weapons of greatly increased range and mobility in attacks which would give very little unambiguous warning.

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*Originally presented at the DNA New Alternatives Workshop, The Presidio, San Francisco, California, November 22-23, 1982.

The Soviets have been evolving a doctrine and operational strategy emphasizing, (1) the need to achieve surprise by keeping indications ambiguous and so leaving NATO little time for adequate preparation; (2) the need and the plan to overrun and destroy by various nonnuclear means key components of NATO's nuclear forces in Europe before a political decision is likely to be made on their use; and, (3) to conclude the war rapidly by non-nuclear means while NATO is still in the process of mobilizing.

The increased Soviet conventional threat results not only from the massive, qualitative and quantitative Soviet buildup, but from geo-strategic changes: an increased, now critical Western dependency, in peace as well as war, on areas outside of the NATO boundaries such as the Persian Gulf; a drastically reduced Western access to these areas and a greatly increased Soviet access. The Soviets now can exploit their interior lines of communication to move some high performance threats more rapidly to such critical points near their periphery than the West. This means the West may have to deal with a regional conflict endangering alliance interests under the shadow of Soviet force; and may have to deal also with the Soviet regional application of force under the shadow of a continuing Soviet threat to the NATO Central Region. This imposes much more severe requirements to achieve an adequate capability to protect many places of critical interests to the West--places we once regarded as facing only "low to moderate" threats. It also presents new opportunities for a Soviet strategy and tactics that can divide the allies and neutralize them selectively. Such a strategy would exploit the Soviets' increased ability to isolate and to coerce or

attack one of the Western allies and, at the same time, to give other allies the opportunity to opt out while holding them under threat.

The very large increase in the Soviet ability to project power near their periphery has potentially decisive importance because several of these areas are vital for the U.S. and its major allies and they are much more accessible to the Soviets than they are to the West. The Soviets have also substantially increased their ability to project military strength at very great distances--as they illustrated most spectacularly in Angola. And both in distant places and near their periphery, they have developed the use of proxies for their own intervention. These areas distant from their borders are, in general, less critical for the major Western allies and, in many cases, the West has better access than the Soviets or is at least at a smaller relative disadvantage than in places close to the Soviet periphery. Nonetheless, conflicts in these remote areas may have a substantial affect on Western interests even when they are not decisive. While lower in priority, they have to be taken into account.

C. New Strategy

The Administration strategy for meeting several widely separated but potentially lethal threats to the alliance recognizes that these cannot be met by technical means alone. The threats will, for example, require new forms of cooperation between land-based airborne warning, land-based fighters and naval forces, etc., and new sorts of cooperation between allied and U.S. forces; a peacetime strategy of using repeatable and sustainable responses to ambiguous warning; and a wartime strategy for a controlled and discriminate counter-offensive with

political as well as military objectives. However, advanced technologies will play an essential role in each of these components of a new strategy.

D. New Technologies

These developments in the Soviet threat, and the U.S. strategy to meet these developments, call for an alliance ability to muster force in a timely way at any of the highly threatened areas which are critical and, at least initially, to keep the most expensive and vulnerable manned platforms out of the range of the most intense, undegraded Soviet offense and defense; and to use precise, expendable, unmanned conventional standoff ordnance against a Soviet force invading a critical area; and, if necessary, against shallow military targets in the Soviet Union that are the source of this invasion; and, when appropriate, against deep targets supporting it. We need, moreover, to maintain intact, throughout a conventional conflict, substantial theatre nuclear force capable of deterring the Soviet use of theatre nuclear weapons.

No budget level likely to be available to us and our allies will enable us to meet this increased threat merely by multiplying the number or increasing the complexity of our already costly manned combat platforms. These platforms will continue to play a vital role. However, the thrust of the new technologies, now emerging, is

(i) to permit our manned combat platforms to stay outside the reach of the most intense high performance offense and defense in the early stages of a campaign while launching a smart missile--possibly with a smart warhead--at a target or cluster

of targets; and

(ii) to permit distributing these increasingly autonomous missiles and warheads among many simpler as well as more complex manned combat platforms; and

(iii) to increase not only the autonomy of the missiles and warheads launched from these manned platforms but also the robustness of their performance in adverse weather, at night as well as day time, and against various enemy countermeasures.

(iv) to allow us to exploit information gained, in peacetime as well as during a war from space, airborne, and ground sensors; and to use this information in manned platforms and the missiles and warheads launched from them.

(v) and ultimately to enable us to exploit such information for large scale control of an entire battlefield.

It appears, for example, that against the large formations of moving tanks which have, quite naturally, preoccupied our allies and our own Army in the center of Europe, low altitude dispensers capable of dispersing submunitions against an entire tank company might improve our sortie effectiveness by an order of magnitude even if these submunitions are unguided; and, if they are guided, by two orders of magnitude.

However, there have already been even larger improvements in solutions to the easier problem of destroying hard, fixed points by methods that are more resistant to countermeasures. Though fixed targets are easier, they are by no means trivial in importance. Even in the European center, with its redundant rail and road network, and many opportunities for off-road mobility, moveable targets are constrained in

their movements by the terrain, by the need for cover, and by the need for maintaining command, control and communications; moreover, armored tank companies move only a small fraction of the time and their movements might be more tightly constrained and fixed by the interdiction of carefully selected, fixed points.

Even more important, off-center contingencies which, today, threaten critical alliance interests in the most plausible ways, offer even larger and earlier opportunities for applying the new smart technologies. The contrast between the European Central Region, on the one hand, and Norway, Turkey and Iran, on the other hand, illustrates the point. (South Korea is an intermediate case.)

Compared to the Federal Republic, Norway, Turkey, and Iran, for example, have more area, less population, fewer airfields, fewer railroads, fewer roads, and offer less off-road mobility and fewer alternative invasion routes to an invader. The possible alternative paths of the airborne and ground elements of a Soviet combined arms invasion are more predictable. Though the Soviet threat in these off-center contingencies is definitely a high performance threat, it can be more easily intercepted and interdicted--if we are prepared for it. The ability to destroy some tens of fixed, hard points is much more important here than in the center. On the other hand, the U.S. has essentially no steady state presence in Norway and very little in Turkey and, of course, none at all in Iran. So the ability to move AWACS or other aircraft with advanced sensors, such as or PAVE MOVER radars or SOTAS, and to move long or medium-range bombers or fighter aircraft armed with precision guided missiles and advanced conventional warheads in peacetime, and in

advance of a crisis, in response to ambiguous signals of increased adversary readiness, is essential.

Some fighter aircraft can serve several functions besides interdiction and interception of the invading force. They can also aid in the air defense of the allied country from which our forces are being projected against the invasion and in defending, jointly with naval forces, the sea lines of communication to that country (for example, Turkey)--which may not be the same as the country or countries immediately invaded (for example, Iran and other Persian Gulf countries). The less we are able to perform these missions, the less likely will an ally be to allow the use of its own facilities or forces in an actual crisis or conflict.

E. New Technology, Allied Forces & Security Assistance

It is clear that not only U.S. forces but allied forces need to exploit more effectively the possibilities of emerging smart technologies. In fact some allies have made advances on their own, (like the low altitude dispensers developed by West Germany's MBB,) which have led to U.S. and U.S. allied cooperative developments (as in the case of the lighter weight dispensers that both Brunswick and Northrop are developing with MBB). Even though this can present risks--which have to be closely watched--of Soviet acquisition of these new technologies, it will be important that many of these technologies find their way into allied forces. Especially, in the case of poor allied countries which need security assistance, the possibility of putting smart missiles and warheads on simpler aircraft, designing smart modern rounds for older barrels and the like, needs vigorously to be pursued.

Finally, the off-center contingencies as well as the canonical contingency in the center can escalate to include deep strikes against fixed military targets or war-supporting industry inside the Soviet Union. Since the late 1950s when most of the current strategic conceptions were formed, expected CEPs have improved from the 12-30,000 feet first anticipated for ICBMs and SLBMs to the to 200 ft. CEPs for cruise missiles (without terminal guidance) and 500-600 ft. CEPs for ballistic missiles in the process of deployment. This improvement is roughly the equivalent for blast damage against a point target of an increase by six orders of magnitude in yield, and offsets a six order of magnitude increase in hardness against blast overpressures. It means an increase in effectiveness of four orders of magnitude, and a corresponding decrease in the area surrounding the target subject to unwanted collateral damage. (If we take account of the fact that the dominant cause of fatalities to people in the open at lower yields is prompt radiation, and, at high yields on a clear day, is likely to be thermal, then the area subject to such collateral damage by a single weapon with a high probability of destroying a pig iron blast furnace--a classic war supporting industrial target--reduces by a factor of 5,000 as median inaccuracies diminish from 30,000 ft. to 200 ft.)

The additional one order of magnitude improvement involved in the future deployment of weapons capable of delivery at great range with near-zero inaccuracy, will be, in many ways, even more revolutionary since it will open up the possibility of using non-nuclear weapons for many targets previously open only to nuclear destruction. (And a correspondingly drastic further potential reduction in collateral

damage--perhaps by several orders of magnitude.)

The revolutionary changes in effectiveness in destroying targets that flow from precision and the discrimination that precision makes possible affects not only the conduct of possible wars in critical places in the center and off center near the Soviet periphery but also potential conflicts elsewhere that are less than critical and may not involve the Soviet Union directly. Such conflicts, for example, tend to be fought out before the television cameras. And a Western democracy may need to be able to destroy an artillery battery placed deliberately next to a neutral or friendly embassy or a civilian hospital or a children's school with minimal collateral damage. Or a Western government may, during some conventional conflict, find it necessary to destroy surgically, with nonnuclear weapons, a small but threatening nuclear force under the control of a petty dictator like Khaddafi.

Moreover, to a substantial extent, these revolutionary non-nuclear technologies are becoming available to the small powers engaged as principals in these remote conflicts. The changes are likely to be revolutionary for them as well as for the Soviet Union and the NATO powers.

It is hard to believe that such revolutionary changes have been adequately reflected in the organization of our bureaucracies, in our procurement programs, in our negotiations with adversaries, or in our strategy. To take one important example embedded in all four, the distinction between strategic forces and theatre or strike forces has little residual relevance. Theater commanders will need precise, non-nuclear ordnance capable of attacking targets on land while keeping the

most expensive platforms out of the way of high-performance Soviet offense and defense. The new technologies will make such extended range missiles increasingly available. This raises problems for bureaucracies about "gray areas" but it offers bright prospects of new sorts of trade-offs and complementarities capable of radically improving both non-nuclear and nuclear missions.

F. Budget, Arms Agreements, Etc

Decisions at the margin need to emphasize allocation to improve "munitions": that is, the missiles and warheads launched from manned combat platforms. Otherwise, pressures to cut the budget may result in cuts in just the wrong places--namely, damaging cuts in the smart subsystems launched from combat platforms which can make order of magnitude differences in effectiveness, rather than in the number of platforms themselves; and also damaging cuts or stretchouts in some of the systems required to inform both the manned combat platforms and the unmanned subsystems launched from such platforms by gathering information and analyzing it before the outbreak of war as well as those which can direct fire during wartime.

We tend to associate "modernization," or long-run increases in effectiveness, with research and development on large combat platforms and on their acquisition. And we usually think of the ordnance launched from these platforms as affecting only, or mainly, our readiness to fight and to sustain a fight, at the present level of effectiveness,in case war should break out in the near future. But this is wrong. Improvements in smart ordnance are a key part of the process of moderni-

zation today. Deferring the acquisition of such munitions then not only can lower dangerously our readiness, it can mean sacrificing essential increases in effectiveness. We miss this point, in part, because of the bad habit of talking about the military balance with adversaries almost exclusively in terms of large platforms. That habit is endemic especially to debates on arms negotiations and accounts in part for their perverse focus on symbols rather than substance.

The pressure for a nuclear freeze and for nuclear arms agreements with the Soviets could have perverse effects on the overt purposes of such freezes and agreements: namely to reduce our reliance on nuclear weapons and to reduce their number. Any vehicle that can deliver a thousand or two thousand pound non-nuclear warhead, from an extended range, with precision enough to destroy a target, can surely deliver effectively a smaller, much lighter weight nuclear warhead at even greater range. Any agreement, therefore, to stop or reduce all systems, or all systems of a given type, which are <u>capable</u> of delivering nuclear warheads, would stop the introduction of the conventional systems that might increasingly replace nuclear warheads; and so prevent the reduced numbers of nuclear weapons and the reduced reliance on them which the agreement appears to seek. The original protocol, now expired, to SALT II, suggests that our negotiators will need to keep in mind Florence Nightingale's maxim: "Whatever else hospitals do, they shouldn't spread disease."

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